

CLAIMS

What is claimed is:

1. A method for compressing image data corresponding to an image comprising a plurality of pixels defining a grid, each pixel having at least one component value, comprising:
- dividing the grid into at least one rectangular area;
 - for each rectangular area:
 - dividing the rectangular area into a number of triangles, each triangle defining a boundary comprising three edges;
 - for each of triangle:
 - identifying the vertices of the triangle;
 - determining predicted pixel component values for at least a portion of the pixels enclosed within and/or on the boundary of the triangle;
 - comparing the predicted pixel component values with actual values of said at least one component value to determine if a similarity threshold is met;
 - processing a next triangle if the similarity threshold is met, otherwise,
 - dividing the triangle into two new triangles, each defining a boundary and comprising three edges; and

20 reiteratively repeating identifying the vertices,
21 predicting pixel component values, and comparing actual
22 and predicted pixel component values to determine if a
23 similarity threshold is met for each existing triangle and any
24 new triangles that are created; and
25 generating compressed image data defining each triangle
26 that is created and actual and predicted pixel component values
27 within the triangle.

1 2. The method of claim 1, wherein the compressed image data
2 comprises at least one string, the method further comprising compressing
3 said at least one string using a data compression algorithm.

1 3. The method of claim 1, wherein at least a portion of the triangles
2 are defined by data identifying pixels coincident with or proximate to a set
3 of vertices for the triangle, and the predicted pixel component values for
4 those triangles are determined by interpolating actual pixel component
5 values at the vertices of each triangle.

1 4. The method of claim 1, wherein the predicted pixel component
2 values are determined by interpolating actual component values
3 corresponding to pixels that lie on and/or proximate to the edges of each
4 triangle.

1 9. The method of claim 1, further comprising:

2 determining if a texture map can be applied to pixels of a given
3 triangle to meet the similarity threshold; and
4 storing data identifying the pixels within and/or on the triangle
5 boundary and data corresponding to the texture map for any triangle for
6 which it is determined that texture mapping can be applied.

1 10. The method of claim 1, wherein each of said at least one
2 rectangle comprises a square.

1 11. The method of claim 10, wherein the image comprises a
2 plurality of pixels contained within a rectangular grid, and wherein the
3 rectangular grid is divided into a number of non-overlapping squares that
4 contain all of the pixels within the rectangular grid.

1 12. The method of claim 1, wherein at least one triangle comprises
2 a right angle corner and a hypotenuse, and where dividing said at least
3 one triangle into two triangles comprises dividing said at least one triangle
4 along a line connecting a midpoint of the hypotenuse to the right angle
5 corner.

1 13. A method for reproducing an image based on a set of
2 compressed image data corresponding to an original image comprising a
3 plurality of pixels defining a grid, said compressed image data including

1 16. The method of claim 13, wherein the compressed image data
2 includes data pertaining to sets of pixels defining edges of at least a
3 portion of said plurality of triangles and including pixel component values
4 for those pixels, further wherein the pixel component values for the
5 triangles are determined as a function of the pixel component values
6 corresponding to the pixels defining the edges of the triangles.

1 20. A system for compressing image data corresponding to an
2 image comprising a plurality of pixels defining a grid, each pixel having at
3 least one component value, comprising:
4 a memory in which machine instructions are stored; and

27 triangle and any new triangles that are created; and

1 21. The system of claim 20, wherein at least a portion of the
2 triangles are defined by data identifying pixels coincident with or
3 proximate to a set of vertices for the triangle, and the predicted pixel
4 component values are determined by interpolating actual pixel component
5 values at the vertices of each triangle.

1 22. The system of claim 20, wherein the predicted pixel
2 component values are determined by interpolating actual component
3 values corresponding to pixels that lie on and/or proximate to the edges of
4 each triangle.

1 23. The system of claim 20, wherein the image comprises a color
2 image, and said at least one component value comprises a Red
3 component value, a Green component value, and a Blue component
4 value, and wherein execution of the machine instructions by the processor
5 further implements the function of converting the Red, Green, and Blue
6 component values into luminance/chrominance component values.

26. An article of manufacture for compressing image data
corresponding to an image comprising a plurality of pixels defining a grid,
each pixel having at least one component value, comprising:

- a memory media adapted to be used with a computer; and
- a plurality of machine instructions stored on the memory
media, said machine instructions effecting a plurality of functions when
executed by the computer, including:
 - dividing the grid into at least one rectangular area;
 - for each rectangular area:

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1 30. The article of manufacture of claim 26, wherein said functions
2 effectuated when executed by the computer further include the functions
3 of:

1 31. The article of manufacture of claim 26, wherein the image
2 comprises a plurality of pixels contained within a rectangular grid, and
3 wherein the rectangular grid is divided into a minimum number of non-
4 overlapping squares that contain all of the pixels within the rectangular
5 grid.